

Appln No. 10/767,875
Am dt date July 19, 2006
Reply to Office action of March 21, 2006

REMARKS/ARGUMENTS

In the Office action dated March 21, 2006, the examiner rejected claim 10 under 35 U.S.C. § 103(a) as allegedly obvious over Yoshida, et al., "Degradation mechanism of alkyl carbonate solvents used in lithium-ion cells during initial charging" in view of Thomas, "Electrochemical insertion of sodium into hard carbons" and Idota, et al. (U.S. Patent No. 5,618,640). However, applicant has amended independent claims 10 and 12 to recite a negative electrode comprising a carbonaceous negative active material and an aqueous binder, the aqueous binder consisting essentially of a butadiene-based rubber and a cellulose-based compound. None of Yoshida, Thomas and Idota teach or suggest such a feature. Specifically, Yoshida and Thomas fail to disclose the use of an aqueous binder and Idota fails to disclose the use of a carbonaceous negative active material. Rather, Idota discloses the use of a negative active material represented by the formula $M^1M^2_pM^4_q$ where M^1 and M^2 are selected from Si, Ge, Sn, Pb, P, B, Al, As and Sb, and M^4 is selected from O, S, Se and Te. Column 4, lines 19-33. Because Idota fails to disclose the use of a carbonaceous negative active material, one of ordinary skill in the art would not have been motivated to combine the binders used in Idota with the carbonaceous materials discussed in Yoshida and Thomas. Accordingly, claims 10 and 12 are allowable over Yoshida, Thomas and Idota.

The examiner also rejected claims 10 and 12 under 35 U.S.C. § 103(a) as allegedly obvious over Igarashi, et al. (U.S. Patent No. 6,573,004). However, applicant has amended claims 10 and 12 to recite that the aqueous binder consists essentially of a butadiene-based rubber and a cellulose-based compound. Igarashi fails to teach or suggest such a feature. Rather, Igarashi discloses the use of a polyvinyl alcohol binder, either by itself or in combination with another "conventional" binder. column 6, lines 13-46. Although Igarashi lists styrene-butadiene copolymers and cellulosic compounds as possible "conventional" binders for use with the polyvinyl alcohol binder, Igarashi does not disclose the use of these "conventional" binders without the polyvinyl alcohol binder. Rather, Igarashi expressly teaches away from the use of "conventional" binders by themselves, noting that such binders have poor binding strength.

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Column 2, lines 41-54; Column 2, line 66 to Column 3, line 4. Therefore, Igarashi fails to teach or suggest an aqueous binder consisting essentially of a butadiene-based rubber and a cellulose-based compound, as recited in claims 10 and 12. Accordingly, claims 10 and 12 are allowable over Igarashi.

Claims 10 and 12 now remain pending in this application. Applicant has amended claims 10 and 12. In light of the above amendments and remarks, applicant submits that pending claims 10 and 12 are in condition for allowance. Applicant therefore respectfully requests a timely indication of allowance. However, if there are any remaining issues that can be addressed by telephone, applicant invites the examiner to contact applicant's counsel at the number below.

Respectfully submitted,
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